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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/783,908 | 02/20/2004 | Jon Jody Fong | USA.292-1 | 7191 |
| 7590 05/31/2006 | | | | |
| 3D Systems, Inc. 26081 Avenue Hall Valencia, CA 91355 | | | | |
| | | | EXAMINER | |
| | | | LUK, EMMANUEL S | |
| | | | ART UNIT | PAPER NUMBER |

1722

DATE MAILED: 05/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/783,908 | Applicant(s) FONG, JON JODY | |
| | Examiner Emmanuel S. Luk | Art Unit 1722 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-21 is/are rejected.
- 7) ☒ Claim(s) 22-31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>2/20/04;7/8/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 11-17 have invoked means plus function pursuant to 35 U.S.C. 112, sixth paragraph. Where means plus function language is used to define the characteristics of a machine or manufacture invention, claim limitations must be interpreted to read on only the structures or materials disclosed in the specification and "equivalents thereof." (Two en banc decisions of the Federal Circuit have made clear that the Office is to interpret means plus function language according to 35 U.S.C. 112, sixth paragraph. In the first, *In re Donaldson*, 16 F.3d 1189, 1193, 29 USPQ2d 1845, 1848 (Fed. Cir. 1994), the court held:

The plain and unambiguous meaning of paragraph six is that one construing means-plus-function language in a claim must look to the specification and interpret that language in light of the corresponding structure, material, or acts described therein, and equivalents thereof, to the extent that the specification provides such disclosure.

In this case, the applicants have invoked means for supporting, means for forming layers and means for cooling in claim 11. The examiner will look to the structure taught by the specification for the claimed apparatus.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanders, Jr et al in view of Leyden.

Sanders, Jr. et al. discloses an apparatus for forming a three-dimensional object by selectively dispensing a build material from a dispensing device in a layer-wise manner over a object staging structure, the apparatus operates by: processing data to establish object layer data; establishing motion in a main scanning direction by reciprocating the object staging structure relative to the dispensing device; dispensing the build material from the dispensing device during the reciprocating motion of the object staging structure in the main scanning direction according to the object layer data to form layers of the three-dimensional object; wherein the dispensing device remains substantially stationary during the step of dispensing the build material; further shifting the dispensing device in a build direction after each layer of the three-dimensional object is formed; further there shifting the object staging structure in a build direction after each layer of the three-dimensional object is formed; offsetting the position of the dispensing device in a secondary scanning direction when the object staging structure is at either opposed end of the reciprocating motion in the

Art Unit: 1722

of: offsetting the position direction when the object staging structure is at either opposed end of the reciprocating motion in the main scanning direction (e.g. col. 1 line 62 - col. 3 line 35, col. 5 lines 41-52); wherein the reciprocating motion in the main scanning direction establishes at least one raster line for the dispensing device extending between opposed ends in a build environment over the object staging structure, and the build material is dispensed on selected target locations on the raster line (e.g. col. 8 lines 15-29, col. 9 lines 11-22, claim 47); further comprising: processing data to establish object support data; dispensing a support material on selected target locations to form supports for the three-dimensional object (e.g. col. 4 lines 51-56).

Sanders, Jr. et al. does not specifically providing means for cooling the layers of the object.

However Leyden et al. discloses a selective deposition modeling apparatus comprising normalizing the surface of the layers after each layer has been dispensed to establish a uniform layer thickness for each layer (e.g. claim 1); exposing the dispensed build material to actinic radiation to cure the build material (e.g. claim 12); the build material and the support material being selectively dispensed from the same dispensing device (e.g. claims 8-10); means to cool the layer by imparting an air stream flow directed toward the object staging structure so as to dived the air stream flow away from the dispensing device (e.g. col. 12 lines 15-39) by using blowing and sucking ducts to remove the cooling air from the surface (col. 12 lines 20-24). These ducts serve to divert the air stream flow away from the dispensing device. Specifically, Leyden et al.

Art Unit: 1722

states, "These ducts might be configured to provide air flow in the opposite direction to print head movement thereby reducing the net wind velocity coming into contact with the partially formed object."

Sanders et al. and Leyden et al. are analogous art because they are both used for selective deposition modeling. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sanders, Jr. et al. with Leyden et al. since Leyden et al. teaches that diverting the air away from the dispenser reduces the wind velocity coming into contact with the partially formed object (col. 12 lines 33-36).

5. Claims 18-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Leyden.

Leyden et al. discloses a selective deposition modeling apparatus comprising normalizing the surface of the layers after each layer has been dispensed to establish a uniform layer thickness for each layer (e.g. claim 1); exposing the dispensed build material to actinic radiation to cure the build material (e.g. claim 12); the build material and the support material being selectively dispensed from the same dispensing device (e.g. claims 8-10); means to cool the layer by imparting an air stream flow directed toward the object staging structure so as to divert the air stream flow away from the dispensing device (e.g. col. 12 lines 15-39) by using blowing and sucking ducts to remove the cooling air from the surface (col. 12 lines 20-24). These ducts serve to divert the air stream flow away from the dispensing device. Specifically, Leyden et al.

Art Unit: 1722

states, "These ducts might be configured to provide air flow in the opposite direction to print head movement thereby reducing the net wind velocity coming into contact with the partially formed object."

Leyden fails to teach at least one fan to generate a flow of air.

However, it would have been obvious to one of ordinary skill in the art that Leyden teaches a fan for sucking and blowing the air from the ducts since these are widely known in technology for moving air and it is inherent that a fan is being used to move the air through the ducts of Leyden.

Allowable Subject Matter

6. Claims 22-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a cooling system for an apparatus for forming three dimensional objects with the system having at least one fan and at least one duct having inlet and exit end opening into the build chamber with the air duct being shaped for uniform air flow and further the air duct having a protrusion on the exit end for diverting the uniform sheet of air flow away from the air duct and towards the layers of the three-dimensional object.

Art Unit: 1722

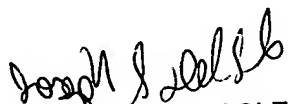
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (571) 272-1134. The examiner can normally be reached on Monday-Thursday 8 to 5 and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra N. Gupta can be reached on (571) 272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EL


JOSEPH S. DEL SOLE
PRIMARY EXAMINER
5/30/08